

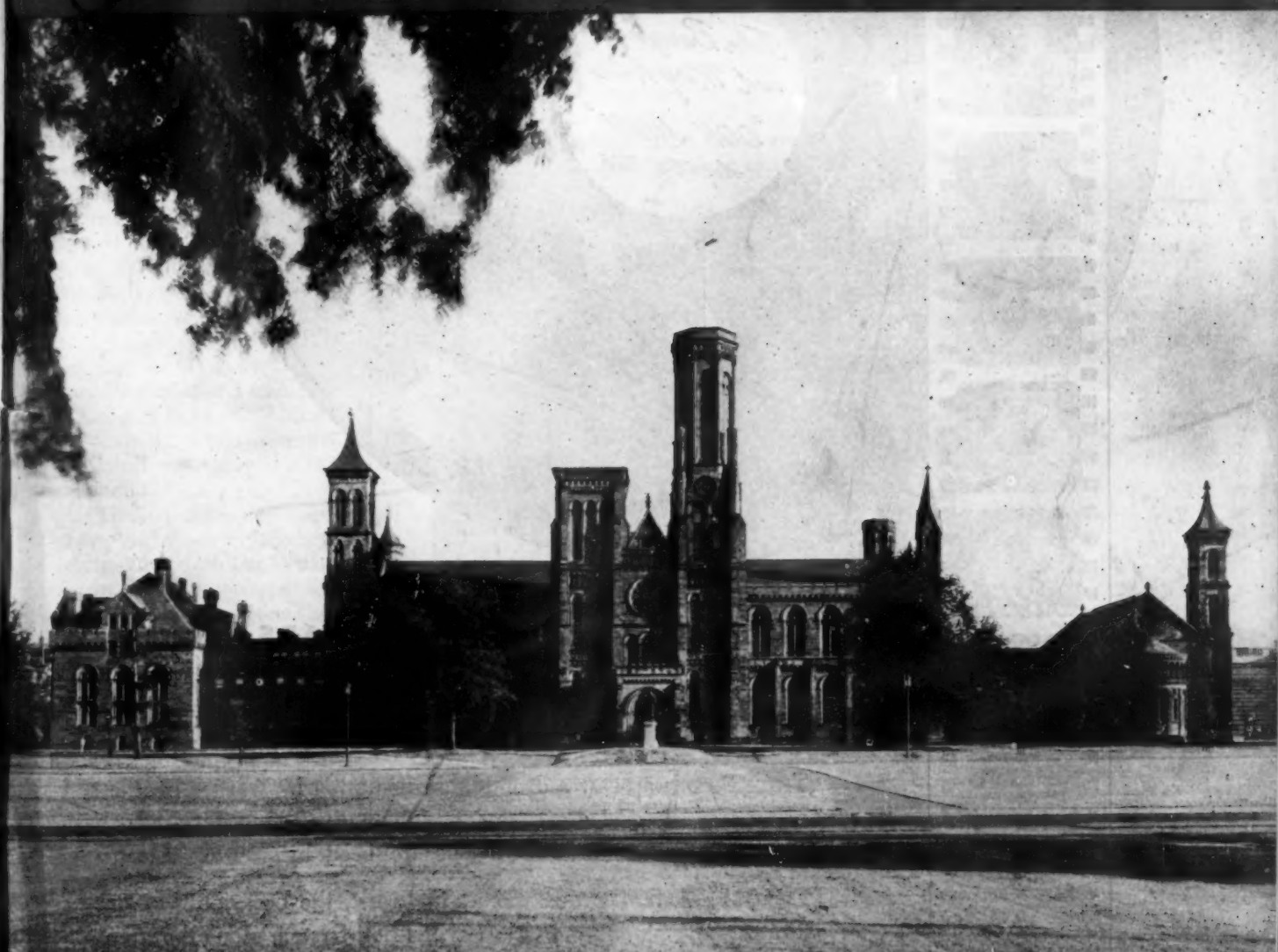
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TECHNOLOGY DEPT.

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THE WEEKLY SUMMARY OF CURRENT SCIENCE - AUGUST 10, 1946.



Celebrates Centennial

See Page 92

A SCIENCE SERVICE PUBLICATION

TWENTY-FIFTH ANNIVERSARY

1946



TWENTY YEARS AGO

the movies learned to talk

THEN Broadway saw a dramatic presentation by Warner Brothers, using a synchronized system for high-quality sound developed by Bell Telephone Laboratories and produced by Western Electric.

Epochal for the motion picture industry, the occasion was only one of many landmarks set up by the Bell System along the stream of communication development.



BELL TELEPHONE LABORATORIES

EXPLORING AND INVENTING, DEVISING AND PERFECTING, FOR CONTINUED IMPROVEMENTS AND ECONOMIES IN TELEPHONE SERVICE

PHYSICS

Carbon 14 Into Service

Radioactive isotope carbon 14, byproduct of the atomic bomb, has been shipped to hospitals and research laboratories to begin its career for science.

► FIVE LITTLE pea-sized amounts of an atomic bomb byproduct, called radioactive carbon isotope 14, were shipped from Oak Ridge, Tenn., on Aug. 2, first of the Manhattan District's atomic materials to be put to peaceful use.

For the next 10,000 to 25,000 years these chemicals from the atomic pile will emit 37,000,000 electrons a second, allowing them to be traced wherever they are. More important is this fact:

In a few years or even months the five laboratories receiving these new research materials may be able to announce new discoveries about cancer, diabetes, the conversion of sunlight into stored energy, tooth decay and fat utilization in the human body.

First carbon 14 unit, with the active material weighing only about one ten-thousandth of an ounce, went to the Barnard Free Skin and Cancer Hospital of St. Louis, with Dr. E. V. Cowdry and Dr. William L. Simpson receiving the precious stuff that today is more useful than radium.

Some of the problems in diabetes will be unraveled by use of another carbon 14 unit by Dr. D. Wright Wilson of the University of Pennsylvania School of Medicine. Carbon in sugar and lactic acid will be tagged with the radioactive carbon and fed to well animals and those sick with diabetes.

At the University of Minnesota Dr. W. D. Armstrong will trace the deposition of radioactive carbon in inner pulp and enamel of teeth and in bone, fundamental information needed in puzzling out the reasons for good and bad teeth. Similarly Dr. I. L. Chaikoff at the University of California School of Medicine will follow its use in liver, muscle and blood.

First use of carbon 14 upon a non-medical problem will be by Nobelist James Franck of the University of Chicago in photosynthesis studies. This is the basic method of storing the energy of the sun in plants. Understanding this mechanism of the green leaf may mean more to an energy-using world than energy from the chain-reacting uranium pile.

In the St. Louis cancer studies made possible with carbon 14 the radioactive material in the form of a carbonate will be converted into carbon dioxide and then into acetic acid. It will be shipped to Antioch College where a cancer-producing agent, called 20-methylcholanthrene, will be prepared. This chemical, full of tagged carbon atoms, will be used in animal experiments at both Antioch College and St. Louis to discover just where the cancer-producing parts of the compound do their cancerous work.

While the first use of radioactive carbon 14 is as a label, tracer or tag, detecting the atomic explosions of its atoms with Geiger counters, it may be possible later to use it as an agent in the actual treatment of some diseases.

Hundreds of requests for radioactive

elements made in the Monsanto-operated Clinton laboratories, uranium piles have been received. Many other kinds of chemical elements, made artificially radioactive, will shortly be supplied.

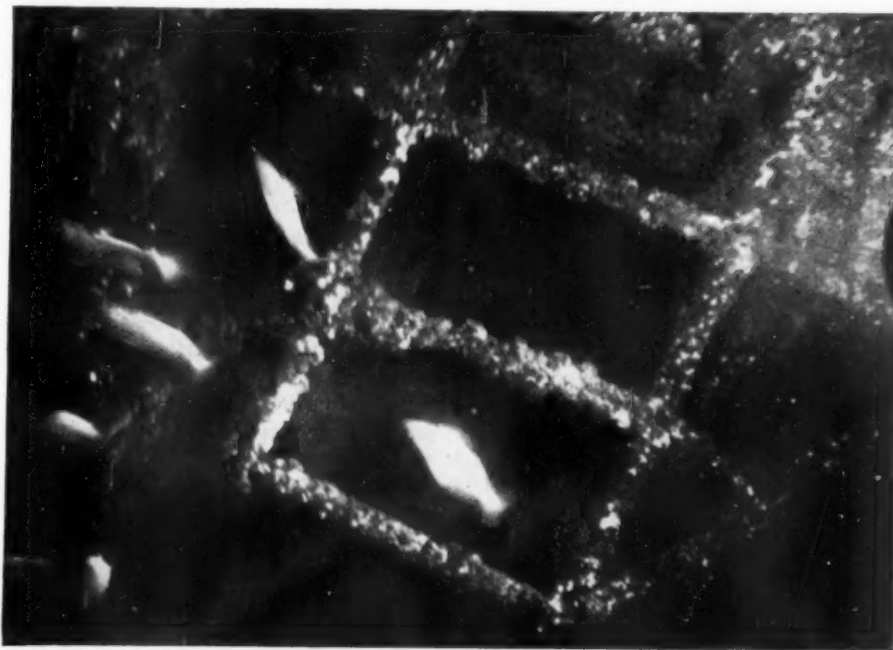
Radioactive gold is wanted by Vanderbilt University to study possible use in treating leukemia. Radiophosphorus 32 is desired by Purdue for medical research. Sulfur 35 would be used by American Smelting and Refining Company at Salt Lake City to study plant growth. Montefiore and Memorial Hospitals in New York ask for radioiodine for thyroid studies. The University of Michigan wants radioactive antimony, arsenic and caesium for fundamental nuclear studies.

Radioisotopes are sold by the government at cost, the radiocarbon units costing \$400 each.

Science News Letter, August 10, 1946

An important *by-product* of corn is the oil found in the germ, of which 200,000,000 pounds are produced annually in America.

The brown-winged *hawk* always garnishes her eggs with one carefully placed green leaf.



OCEAN BOTTOM—Part of a sunken wreck with fish swimming through it at a depth of 138 feet. The picture was taken with a camera recently developed for photographing the depths of the ocean. Two such cameras have been developed by Dr. Maurice Ewing of Columbia University and Woods Hole Oceanographic Institution and his associates, Allyn Vine and J. L. Worzel. Both pieces of apparatus include an upright pole with the trigger at the lower end. They point nearly downward, and exposure is made when the extended trigger hits the bottom at the proper depth.

ATOMIC ENERGY

Bikini Breath of Death

Lethal fog of radioactive water droplets and fission byproducts lingered at Bikini long after subsurface explosion, and left complete death in its wake.

By DANIEL WILKES

Science Service Crossroads Correspondent

► THE BREATH of Death, even more than the shattering of ships, was the most awesome thing about the second atom bomb's subsurface burst at Bikini.

It is already being suggested that newer capital ships might have survived the underwater shock that sank the old Saratoga and the older Arkansas and Nagato, but if they did remain afloat they would surely be manned only by corpses.

That clinging, persistent, lethal fog of radioactive water droplets and fission byproducts that the bomb spewed into the air over the whole target area on Baker Day, drenching every ship in the array, could hardly have left anyone alive on board when it finally did move slowly away, like a legendary monster reluctantly leaving its prey.

Anybody on deck of a ship drenched with this deadly fog would be a "goner," Vice-Adm. W. H. P. Blandy, commander of Joint Task Force One, commented. And the ventilating systems of all present-type ships would most probably spread it all through their interior spaces before the blowers could be shut down.

The Breath of Death seems to have taken Navy biological experimenters somewhat off their guard. Capt. R. H. Draeger, in charge of the goat, pig and white-rat details, stated before the test that only 20 pigs would be placed on two ships, and 200 mice on four ships, as compared with more than 3,000 animals that were exposed to the aerial blast on July 1. Had anything like the long-hovering, killing mist been anticipated, it may be taken for granted that a larger number of experimental animals would have been used for the second test.

Even after the cloud itself had slowly moved off, a large part of Bikini lagoon remained too "hot" with radioactivity to permit anything but the quickest dashes into the contaminated area, under carefully guarded conditions.

Whereas few fish if any were killed by the first blast, this time there were

plenty of them. Probably they succumbed to the same shock wave that sank the ships, though lethal radiological effects may help to account for them.

Navy Research Began Early

► THE STORY of the devastation in the lagoon at Bikini began more than two years ago in early 1944, before the first atomic bomb was exploded.

These tests are based, in part, on tactics considered for use against Japanese naval power, Rear Adm. W. S. Parsons, deputy task force commander for technical direction, revealed as the damage from the underwater blast July 24 was surveyed.

"Late in 1943 and early in 1944 we did not own bases from which we could attack Japan," Adm. Parsons explained, adding that Truk was a primary target.

"For a few months in 1944 until Truk ceased to be a threat, some consideration was given the atomic bomb, which was still in the development stage, for use against the Japanese navy.

"After we went duck shooting through the Truk area in 1944, the Japanese Navy ceased to be a threat, and we stopped considering the bomb for use against it," Adm. Parsons disclosed.

Maj. Gen. Leslie R. Groves of the Manhattan District and others were in on the calculations at that time, he reported.

"Our memory of the earlier considerations served as a background when we began laying out these tests," the deputy task force commander said, adding:

"I must say that our ideas in 1943 and 1944 on naval atomic warfare were not fully developed.

"These tests at Bikini represent a much greater crystallization of thought on the matter," Adm. Parsons declared.

He pointed out that the job of developing the atomic bomb went into high gear late in 1942. At that time, and for some time after, the United States was fighting a defensive war. Therefore, he said, it was necessary to give thought to using it in a manner which would at

that time most benefit American tactics—against Japanese naval power.

Once that threat was eliminated, the primary target became Japanese cities, and all effort was given to developing tactics for such targets as Hiroshima and Nagasaki.

Scientists are getting their first really good chance to get full information about what atom bombs can do as a result of the two tests at Bikini, Adm. Parsons pointed out.

This is because there was plenty of time to plan out the whole operation and set up instruments and recording cameras exactly as wanted. There will also be time enough to evaluate, compute and compare.

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The test at Alamogordo, in March, 1945, could not be called a test in the full scientific sense, because it had to be conducted under wartime pressure, which permitted no time for obtaining

full instrumental and photographic data.

Adm. Parsons was in charge of Naval activities at the atomic bomb factory at Los Alamos, N. Mex., where the weapon was developed.

Science News Letter, August 10, 1946

PHYSICS

Atomic Age Up to Now

The first anniversary of the bombing of Hiroshima records a brief but portentous history. Great strides include shipping of isotopes for peacetime research.

► THE WORLD'S new era, the Atomic Age, has had a very brief history so far, but one packed with tense drama. First intimation that most people had that the dreamed-of possibility of using atomic energy had been realized came just a year ago. The Japanese city of Hiroshima was blotted out by a single air-borne bomb, hastening the end of the second World War.

The first anniversary of this epoch-marking catastrophe was heralded only a few days ago by two less spectacular events which may, however, prove even more significant in the longer perspective of history. First was the signing of the atomic energy control bill by President Truman on Aug. 1, putting the power over fissionable materials and their uses definitely into the hands of a civilian commission. Second was the shipment from Oak Ridge, Tenn., of nuclear fission products intended for peacetime scientific purposes. These steps should mark the turning of atomic power from the ways of war to the paths of peace.

Although Aug. 6 will probably be observed hereafter as the anniversary day of beginning of the Atomic Age, actually that age had a dawn running back into the last few years of the nineteenth century, when X-rays and related phenomena were discovered in European laboratories, followed shortly by the demonstration of radioactivity and the discovery of the element radium by the Curies.

A much condensed chronology of the later dates in atomic energy history includes at least the following:

1939, Jan. 26: American physicists first heard of European experiments showing that slow-neutron bombardment would split nuclei of a uranium isotope, with release of energy.

1942, Dec. 2: First self-maintaining nuclear chain reaction was initiated in a uranium-graphite pile at the University of Chicago.

1945, July 16: First atomic explosion engineered by man blasted the New Mexico desert. Cost of project, to this date, \$2,000,000,000.

1945, Aug. 6: First military use of atomic bomb resulted in destruction of Hiroshima, Japan.

1945, Aug. 11: Second atomic bomb exploded over Nagasaki, Japan.

1946, June 30: First atomic bomb exploded in air over naval vessels at Bikini atoll, sinking five and severely damaging many more.

1946, July 24: Second (subsurface) atom-bomb explosion at Bikini sank three capital ships and several submarines, and damaged other vessels.

1946, Aug. 1: Civilian control of atomic energy becomes law of the land in U. S.

1946, Aug. 2: First shipment of fission products for scientific research made from Oak Ridge, Tenn.

Science News Letter, August 10, 1946

METALLURGY

Slag, Useful By-Product

► OUT OF the blast furnace comes not only iron for America's large ships and high buildings, but slag, constructing material for highways, bridges, and airports. About one ton of slag is produced

along with every two tons of iron.

Slag is made in the Ohio valley, along the shores of the Great Lakes, by the Chesapeake and in the folds of the mighty Appalachians. It is used in almost

every state east of the Mississippi, from Canada to the Gulf.

During the past four decades over 100,000,000 tons of slag have been used in various types of construction. Approximately 60% of this was used in building and maintaining highways in 23 states. Another 25% was used as ballast by railroads.

Molten slag floats on top of molten iron because it is lighter. Either of the two may be drawn off separately. When withdrawn from the furnace, the dissolved gases tend to escape from the molten slag. Some of the bubbles are trapped, however, and generate the pore structure in the solidified slag.

These cells or bubbles within the slag are near-vacuum. They expand the volume of the slag materially, decreasing its weight, yet its structural strength is reduced but slightly. Some slag today is specially treated so it will have a large number of air pockets.

Most of the mineral wool used for insulating is made from slag. Melted in a small furnace or cupola, the slag is run down small grooves where jets of air or steam under high pressure shred it into small blobs. The very speed of these tiny bullets forces the material in them to develop into tails of very fine threads which in turn use up the mass of slag. Mineral slag has only a tiny "shot" head attached to a long fiber tail.

One of the newest uses for slag is in neutralizing soil that is too acid. Sometimes used in place of lime, agricultural slag is made by crushing pieces of slag to extreme fineness.

If you would like to have samples of lightweight slag, mineral wool, slag coated roofing and other specimens, you can secure the Slag Unit of THINGS of Science, a kit prepared by Science Service, by sending 50 cents to SCIENCE NEWS LETTER, 1719 N. St., N. W., Washington 6, D. C., and asking for THINGS unit No. 69.

Science News Letter, August 10, 1946

ANIMAL NUTRITION

Cattle Thrive on Phosphate Drink

► CATTLE on the King Ranch in southern Texas have been getting a phosphate drink and thriving on it. Phosphate salts are added to the drinking water to make up for insufficient supplies in the native vegetation in experiments conducted by the U. S. Department of Agriculture and Texas scientists. Besides being convenient for cattle owners, putting the phosphates in the drinking water enables each animal to get its supply in a soluble form readily assimilated.

Science News Letter, August 10, 1946

GARDENING

Garden Tools To Aid Blind

Strange tools help the blind to have gardens of their own. Wires guide rake and keep weeder safe distance from plants; rod keeps hoe from digging too deep.

► SPADES with bars to keep them from biting too deeply into the soil, hoes with clips so that wire can be used as a guide in keeping rows straight, and weeders with side extensions so they will not get too close to the crop—this strange assortment of garden tools enables blind men and women to have gardens of their own.

So that those who have lost their sight can prepare the soil, plant the seed in straight rows, get rid of weeds themselves and harvest the tomatoes, beans, lettuce, radishes and beets, special tools have been devised by Hugh Findlay of Hatch Lake, Eaton, N. Y. Formerly director of landscape architecture at Columbia University, Mr. Findlay has been devoting the last few years to teaching gardening to the blind.

Rows in these gardens, often ten or twenty feet long, are kept straight by attaching the tools to wire pulled very

taut between tee-rods forced into the ground at both ends of each row. One ankle is allowed to rub against the wire while raking or hoeing, to keep the tool from going off-center.

The depth to which the spade or hoe can sink into the soil may be changed by readjusting the gaging rod. If corn is to be planted in hills, the bar will be adjusted in the lower holes of the spade. The third set of holes, farthest from the tip of the spade, are used in planting potatoes. For late or midseason corn or beans, the bar will be fixed in the second set of holes in the hoe so the furrow may be drawn deeper.

While the plants are still young, a Norcross weeder can be used by adjusting the side extension, that runs along the wire, so the blades will not come too close to the plants. Weeds may also be kept under control by running a scuffle hoe along a guide wire placed between the rows. The blind gardener in this case straddles the wire as he works.

These special tools were first tried out by Armand Michaud of the Perkins Institute and Massachusetts School for the Blind, Watertown, Mass., who, though blind, already had done some gardening. A number of war-blind at the Naval Hospital in Philadelphia are being taught to use these special contraptions, already in use in 28 different states, Cuba, Canada and China. Within a few minutes a blind person can memorize these tools.

Identify Soil by Feel

The right kind of soil for a garden, Dr. Findlay believes, can be identified by feel. Sometimes a sightless person can tell soil by its weight or smell, but it is always best to test the soil by placing a little in the palm of one hand and touching it carefully with the fingertips of the other.

The top and bottom of a bulb can be identified easily by its shape, and, in planting, the distance between the bulbs can be determined by measuring with the feet.

In sowing small garden seed, a small quantity is placed in the hand and with the aid of the thumb, the seed is worked

between the second and third knuckle. By keeping the wire over the furrow, when the tips of the fingers slowly follow the wire, the seed can be dropped in the proper place.

A hobby such as gardening keeps blind people out of doors, overcoming their natural tendency to stay in the house. Fascinating in all its phases, from first planting, through blooming with its wonderful fragrance, and the final triumph of a harvested crop, Mr. Findlay feels gardening is peculiarly adapted to the specialized senses and needs of the blind.

Science News Letter, August 10, 1946

MEDICINE

Rabbit Fever Pneumonia Cured by Streptomycin

► THE DRAMATIC recovery, thanks to streptomycin, of a patient dying of rabbit fever pneumonia, is reported by Drs. Richard B. Cohen and Richard Lasser of the Jewish Hospital of Brooklyn, N. Y., in the *Journal of the American Medical Association* (Aug. 3).

Neither penicillin nor sulfadiazine helped the patient. He was thought at first to be suffering from an atypical pneumonia caused by some virus. But as he got worse and because his job as stevedore might have brought him in contact with infected rodents, tests for plague and tularemia, or rabbit fever, were made.

The test for rabbit fever was positive and then it was learned from his relatives that he had gone rabbit hunting about three days before he got sick, though he had not skinned or eaten the rabbit he killed.

Within 48 hours after streptomycin treatment was started his fever dropped from 104 degrees Fahrenheit to 100 degrees, he felt much better and was on the road to recovery.

Science News Letter, August 10, 1946

AERONAUTICS

Military Planes Now Fly Knots and Nautical Miles

► YOU WILL have to brush up on your knots and nautical miles if you want to keep up with the Army and Navy planes in the future.

The knot is now the standard aeronautical unit of speed for both services, and the nautical mile is the corresponding unit of distance. This is the result of



GARDEN FOR BLIND—Distance from plants to the blade of the Norcross weeder is being measured to be sure the plants will not be injured. Note clip attached to the wire and winged screws for adjusting the distance of the weeder from the plants.

an agreement recently made.

From now on you will say that a military plane has a speed of so many knots. You will never say that it has a speed of so many knots an hour, because "knot" includes the "per hour." One knot is a speed of a nautical mile in one hour. And a nautical mile, the mariner's mile, is about 800 feet greater than the ordinary mile.

The nautical mile is supposed to be one-sixtieth of a degree of the earth's equator. American and English seamen call it 6,080 feet. In other countries it is slightly different, varying up to 8,087 feet.

The nautical mile is about 1.15 times as long as the familiar legal mile of

5,280 feet. Figures giving the speed of a plane in knots are therefore smaller than those giving it in ordinary miles.

When, for instance, the Army states in the future that one of its bombers is capable of 300 knots, it means, in the language to which we are accustomed, about 345 miles per hour. And the commercial transport that averages 300 miles an hour, in Army-Navy language does about 260 knots.

Air-minded people these days are looking forward to a plane that will travel at supersonic speeds; that is, speeds faster than sound travels. At sea level this is around 760 miles an hour. Supersonic speeds in "nautical" language will be those above 660 knots.

Science News Letter, August 10, 1946

MEDICINE

Protecting Against Polio

► **LATEST ADVICE** to parents anxious to protect their children from infantile paralysis: Have all cavities in the children's teeth sealed off by the dentist, so that the polio virus cannot invade the child's body through the decay-exposed nerves in teeth.

This advice comes in "an urgent plea to parents, physicians and dentists" made by Dr. Hans H. Reese, professor of neurology at the University of Wisconsin, and Dr. John G. Frisch, practicing dentist of Madison, Wis.

These scientists urge that the cavities or decayed teeth be treated early in the summer, before the polio season starts, but even now with infantile paralysis on the increase in many states, it may not be too late to take advantage of this protective measure.

The plea of the Madison scientists is based on findings showing that: 1. the polio virus can invade the body through pulp, nerves and tiny tubes in the dentin of teeth exposed by decay or cavities; 2. exposed tooth pulps occur some two and one-half or more times as often in young polio patients as in persons the same age who have not had the disease; and 3. more polio occurs in communities where the water supply is low in fluorine than where it contains enough of this chemical to prevent tooth decay in those who drink it while their teeth are developing.

Details of the findings are reported in the scientific journal, *Dental Digest* (July).

The Madison scientists confirm the

findings of two other scientists who previously reported that polio occurred two and one-half or more times as often in young polio patients as non-polios of the same age in the same communities. These scientists, Drs. Myron S. Aisenberg and Thomas C. Grubb, of the University of Maryland School of Dentistry, also reported that monkeys developed infantile paralysis after the virus had been dropped into the exposed pulps of their teeth.

Exposed tooth pulp, resulting from decay, is only one invasion route for the polio virus, both groups of scientists point out.

Science News Letter, August 10, 1946

MEDICINE

Seasickness Drug Overdose Fatal

► **THE FATAL** poisoning of a prisoner by a new seasickness drug taken while aboard a ship returning from England, has led the Army to warn against overdose with it.

This man and other prisoners dosed themselves with the drug for the "intoxicating" effect.

The drug, known as "Motion Sickness Preventive, Army Development Type," will soon be available to the public for air, train, sea, and car sickness.

As few as six tablets can poison a man, it appears from the report of Col. F. H. Foucar, Capt. B. S. Gordon and Capt. S. Kaye, in the *Journal of the American Medical Association* (July 20).

The patient who died is believed from post mortem tests to have taken at least 30 tablets, but another prisoner was admitted to the hospital appearing to be "intoxicated" after taking six tablets.

The new motion sickness preventive contains sodium amytal, atropine sulfate and scopolamine hydrobromide. The sodium amytal is believed to have caused death in the case of fatal overdose, though the medical officers point out that the question of a possible synergism between it and the belladonna alkaloids cannot be ruled out.

Science News Letter, August 10, 1946

CHEMISTRY

Easily Made Metal-Protecting Coat Available

► **AMERICAN** manufacturers can now make use of a German method of making a temporary coating to protect metal parts during shipment. The formula is available from the U. S. Government.

It is largely a mixture of wool fat, chinawood oil, natural resin and white spirits. It is applied with an ordinary paint brush, dries rapidly, and can be removed by washing with gasoline.

German chemists claim that it is effective against rust, corrosion, and salt water, and that it will not melt in the direct rays of the hot sun. A report, made by the U. S. Naval Technical Mission in Europe, which gives directions for preparing the mixture, can be obtained from the Office of Technical Services, U. S. Department of Commerce.

Science News Letter, August 10, 1946

RADIO

Science Club 10,000 Is CBS Radio Feature

► **THE 10,000th** science club of the nation to affiliate with Science Clubs of America, the Science Service organization, will be described in the "Adventures in Science" radio program over many of the stations of the Columbia Broadcasting System next Saturday, Aug. 17. The program honors the large growth of this science youth organization.

James F. Sears, sponsor of the Bloom Radio Club of Bloom Township High School, Chicago Heights, Ill., will be guest of Watson Davis, director of Science Service, on the program.

The program will be heard at 1:45 p.m. EST, 2:45 p.m. EDT, 12:45 p.m. CST.

Science News Letter, August 10, 1946

FOOD TECHNOLOGY

Loss of Ascorbic Acid Causes Tallowy Milk

► DAIRY scientists and the milk industry have known how to prevent the tallowy flavor in fresh milk, but they never knew the cause of it.

Now, Profs. V. N. Krukovsky and E. S. Guthrie of the dairy department at Cornell University have come up with the answer. They have traced the flavor to the reaction involving the rate of loss of ascorbic acid (vitamin C) in the milk. The scientists are able both to prevent and to induce this flavor.

As a result, they have been able to keep the fresh, pasteurized milk for many more days than is normally possible in the refrigerator without loss of palatability. In the Cornell tests, the milk kept for two weeks.

In addition, the research promises to be useful in the milk powder industry, and it applies in other fields, such as citrus juice-preservation where turpentine-like flavor has been of some concern, and in controlling flavors of certain meat products.

In one oxidative method, oxygen is bubbled through the milk during pasteurization. This greatly reduces the susceptibility of milk to tallowy flavor development.

Market milk contains two forms of vitamin C. These are ascorbic acid and dehydroascorbic acid. The reaction that causes the breakdown of fats in the milk, and thus results in development of the tallowy flavor, can be inhibited by quick and complete oxidation of ascorbic acid to dehydroascorbic acid and by the subsequent heat treatment in pasteurization, Dr. Krukovsky said.

With flavor control, he does not doubt the sale of milk can be greatly increased.

Science News Letter, August 10, 1946

ORDNANCE

Hydro-Bomb Powered By Rocket Engine

► THE HYDRO-BOMB, a new aerial torpedo powered by a rocket engine, was nearly ready for action when the Japs surrendered, the Army Air Forces have revealed.

Using the thrust of burning, expanding gases to propel itself through water, the hydro-bomb was designed by Westinghouse engineers to meet the need of the AAF for a torpedo that could be dropped 600 feet or more from fast

planes, permitting the plane to keep at a safer range from anti-aircraft fire. The new missile is described as the cheapest and simplest aerial torpedo yet developed.

The underwater rocket supplies its own oxygen from the solid fuel that is packed into the pipe-like motor. The impact of striking the water after the bomb is dropped from an airplane throws a switch igniting the fuel. The burning solid fuel sends gases through a nozzle to push the missile through the water.

Slightly shorter and thicker than a submarine torpedo, the hydro-bomb can carry 600 pounds of high explosives. Capable of a thrust of 1,000 pounds, the rocket engine can speed the new torpedo toward a target at 40 knots. Total weight of the projectile is 2,300 pounds.

Shock-treated for protection against the impact of striking the water after dropping hundreds of feet, the hydro-bomb survived a test drop of 2,000 feet.

Science News Letter, August 10, 1946

PETROLEUM

New Triptane Rating For Motor Fuels

► A NEW SYSTEM of rating motor fuels may result from the high-quality gasolines developed for modern airplanes. A "triptane number," rating the fuels according to a leaded triptane-heptane scale, has been proposed at the National Bureau of Standards to replace the current octane classifications.

The trouble with the 20-year old octane scale, according to the Bureau's Cooperative Fuel Research Committee, is that modern aviation fuels have gone over the top of the octane ratings. First prepared in 1926 to cover higher knock rating fuels than any then used, the old scale is now out-of-date.

Present octane numbers for the gasoline you put in your car are derived from the percentage of isooctane blended with normal heptane, which, in a standard engine, gives knock equal to that of a test fuel.

The newly-proposed rating would be in terms of blends of triptane and normal heptane, to both of which has been added about one-tenth of 1% of tetraethyl lead. Triptane is a relatively new compound of exceptionally high knock rating, and the new scale would cover a range from below to above present fuels.

So, one of these days, your gas may be rated with a "triptane number" instead of the present octane.

Science News Letter, August 10, 1946

IN SCIENCE

MEDICINE

PABA May Prove Typhus Fever Remedy

► ONE OF the B vitamins, para-aminobenzoic acid, or PABA for short, may prove an effective remedy for the kind of typhus fever occurring in this country. It has already shown promise in treatment of the louse-borne and far more deadly typhus fever that occurs in epidemics abroad.

Trial of PABA in typhus fever in this country is reported by Dr. Paul K. Smith of George Washington University School of Medicine, formerly lieutenant colonel at the AAF School of Medicine, Randolph Field, Tex., in the *Journal of the American Medical Association* (Aug. 3).

Fever persisted 12 or more days in 22 of 29 typhus patients not treated with PABA, but only seven of the 29 treated with the vitamin chemical had fever that long. There were no toxic effects from the chemical, which suggests that it might safely be given in larger doses with presumably even quicker recovery. Dr. Smith recommends a thorough trial of the chemical with more patients and under more rigidly controlled conditions.

The study was made with the cooperation of members of the Bexar County Medical Society who referred patients for treatment as soon as they thought the patients were suffering from endemic typhus fever.

Science News Letter, August 10, 1946

VETERINARY MEDICINE

Recent War Healthiest In History for Animals

► WORLD WAR II was the healthiest war in history for Army animals. Not a single outbreak of epidemic disease occurred among the many thousands of horses, mules, dogs and pigeons engaged in military operations, thanks to the care of the Veterinary Corps.

Production of vaccines to protect troops against typhus fever and some other diseases became the wartime mission of the Veterinary Corps' laboratory at the Army Medical Center because of the experience and excellent record of this laboratory in producing vaccines for animal protection.

Science News Letter, August 10, 1946

NE FIELDS

METEOROLOGY

Radar Reflectors Chart Wind 100,000 Feet Up

► SPECIAL war-developed reflectors, carried aloft by balloons and traced from the ground by radar, now give meteorologists data on the speed and direction of winds as high as 100,000 feet above the earth's surface, the Army Signal Corps discloses.

Two types of reflectors were developed during the war for use with military radar sets at frequencies ranging from 200 to 3,000 megacycles. A dipole-target consists of three short, foil-wrapped sticks, joined in the center to form 60-degree angles in a horizontal plane, and is for use with 200-megacycle, horizontally polarized radar sets. The other reflector, for microwave radar, is a box-kite-like affair with paper-backed aluminum foil supported in a triangular form by balsa sticks.

Before the war, sighting tubes, called theodolites, were used to chart the course of wind-recording balloons, but this arrangement would not work at night or in low visibility during the day.

The reflectors for radar wind observations were developed at the Signal Corps Engineering Laboratories, Bradley Beach, N. J., after early experiments had been conducted by the Signal Corps and by the Radiation Laboratory, Cambridge, Mass.

Science News Letter, August 10, 1946

AERONAUTICS

Electric Current Keeps Airplane Windshield Clean

► A COATED airplane windshield that eliminates ice and fog with an electrical current has been announced by the Pittsburgh Plate Glass Company.

A permanent transparent coating, commercially named Nesa, conducts an electric current clearing the windshield of ice and fog and strengthens the glass against impact, it was reported. Bonding the coating to another piece of glass with a layer of vinyl plastic is done to remove distortion. Visual characteristics are claimed to be approximately the same as untreated glass.

The coating can be applied to plate

glass, laminated safety glass and multiple-glazed units, and it strengthens the windshield by maintaining a temperature of between 80 and 120 degrees Fahrenheit, found to offer the most effective protection for laminated plate glass.

Electrical contact to the coating is made by applying metallic bus bars to the edges of the glass area.

The new coating was developed after wartime research to produce glass for radar equipment and other electronic instruments that would not collect static electricity and distort registering mechanisms.

Science News Letter, August 10, 1946

PHOTOGRAPHY

Six-Shooter Principle For Flash Lamps

► THE SIX-SHOOTER principle has been applied to photoflash lamps as Samuel Colt applied it to fire-arms a century ago. U. S. patent 2,404,970, issued to H. H. Magdsick of East Cleveland, Ohio, covers a flashlamp with a revolving cluster of six bulbs that can be turned so that each can be brought successively to the focal point of a parabolic mirror and "fired."

All the bulbs are mounted on a common base, which revolves on a spindle turned by a knurled head, held by a bracket at the top of the dry-cell holder. When all the bulbs have been used, the entire group is discarded and a new one set on the spindle in its place.

Science News Letter, August 10, 1946

CHEMISTRY

Chemical Enables Water And Gasoline to Mix

► WATER in gas tanks resulting from moisture condensation can be picked up by a chemical added to the fuel, and dispersed throughout the gasoline in such a way that it aids combustion. The chemical is a development of the Dacar Chemical Products Company.

In working on metal cleaning agents with the same constituents that gel gasoline, it was found that certain soaps of the polyethanolamine series act as water pick-up agents, and are at the same time soluble in gasoline. With them homogeneous mixtures up to 5% water can be obtained.

The chemical can be used as a gasoline anti-freeze, or in dehydrating underground gasoline tanks.

Science News Letter, August 10, 1946

CHEMISTRY

German Insecticide Supplements DDT

► AN INSECTICIDE that takes over where DDT stops in killing the insects that ravage gardens and orchards is now being produced from a formula discovered by German chemists.

The insect killer being produced by Monsanto Chemical Co. is hexaethyl tetraphosphate and was uncovered by U. S. scientific field teams in Germany.

Aphids, or "plant lice," and mites can both survive DDT, but the new insecticide is particularly effective against them. These insects that feed on foliage in gardens and orchards have a "field day" when DDT is used, according to chemists, because the DDT kills the natural enemies of the two pests. But the imported formula promises to restore a better balance when used with DDT.

Another important gain from the new enemy of aphids and mites is that present supplies of nicotine sulfate, used to kill them, are insufficient for national use.

Experiments conducted so far indicate that the brown liquid hexaethyl tetraphosphate will be superior to nicotine sulfate in some respects, chemists report.

Science News Letter, August 10, 1946

NUTRITION

Overseas Diet Was Good for Soldiers

► GIs GRIPE about the monotonous overseas diet, but apparently it did its job of keeping them well-nourished, at least so far as protein is concerned, regardless of the location or length of foreign service.

Capt. Herbert R. Plass, of the U. S. Army Medical Corps, made tests on the nutritional state of 421 Army Air Forces returnees, whose periods of foreign service ranged from 4 to 50 months, and found that the Army diet does not result in frequent deficiency diseases.

Since certain dietary diseases can be detected by a slight shift of what physicians call plasma protein, accurate graphs were kept to compare the average plasma protein of the returned soldiers with that of 50 soldiers and workers who had not been out of this country.

Even though more than half of the A.A.F. subjects ignored a balanced diet while celebrating their 21-day leaves, their nutritional state was normal within four weeks.

Science News Letter, August 10, 1946

CHEMURGY

Peanuts Do a Big Job

Besides their many food uses, peanuts give glue for bookbinding, silky fibers and a cork substitute. All parts of the plant and nut can be used.

By MARTHA G. MORROW

► THOSE CRUNCHY peanuts have some industrial brothers out of the same shells:

Glue for bookbinding, flexible and light-colored.

Cork substitute, made from the ground hulls.

Silky fiber for clothing.

And peanuts are still peanuts, even roasted in the shell for circus eating!

There are new developments in peanut products for your table:

Salted peanuts that are fresh after many months of storage.

Peanut butter from which the oil does not separate.

Peanut oil that does not get cloudy when kept in the refrigerator.

Peanuts, large quantities of which are marketed each year as peanut butter, salted peanuts and peanut candy, were once grown exclusively for sale roasted in the shell and for feeding to hogs. Many millions of pounds today are used in the form of oleomargarine, vegetable shortenings and salad oil. Tomorrow it may appear in a variety of forms ranging from glycerol to pocketbooks.

Excellent tacky glues have been made from the protein left after oil is extracted from the peanuts with a solvent. These re-wettable "goober glues" hold things together almost as tenaciously as animal glues. Light in color, they are particularly good for gumming white paper.

Paper gummed with this protein paste is not likely to stick when stored in a hot humid atmosphere. Particularly suited for use on cardboard or other products that must be bent when glued, these glues were prepared at the Southern Regional Research Laboratory. They are good for gluing paper-covered boxes and for bookbindings.

Silky Yarn from Protein

Both wool-like and silky fibers have been made experimentally from peanut protein. A sticky alkaline solution of the protein is forced through a rayon-type spinneret into an acid bath where it thickens into a yarn. The yarn is treated with formaldehyde to harden the protein and is stretched to bring the molecules into line.

Most of the research on the wool-like fiber was conducted in England. This yarn is suitable for use with rayon, cot-

ton and wool. Fiber with many silk-like properties was produced in the United States.

A way of stabilizing peanut butter so that the oil does not separate and rise to the top, leaving the bottom extremely dry, has been developed at the Georgia Experiment Station with the cooperation of the National Peanut Council, active in coordinating research on peanuts. An effective way of overcoming oil separation has long been sought because the oil floating on top of peanut butter becomes rancid more rapidly than when in contact with the ground peanuts. With little change of existing machinery, all peanut butter can now be protected against having the oil rise to the top.

The peanut butter with which we are familiar is made of finely ground, freshly dry-roasted, blanched peanuts with salt added. Flavored with orange, chocolate, malt and sweet pickle, peanut butter is now being wrapped as a confection. Firm enough to be put in block form, it can be sliced like cheese or meatloaf for use as a sandwich filling.

Oil Has Many Uses

Peanut oil has long shown promise as an excellent product for use in manufacturing mayonnaise and salad dressings, except for the fact that it becomes cloudy at low temperature. As this tends to make mayonnaise separate into layers of oil and water on long storage in the refrigerator, peanut oil has not been used commercially in mayonnaise.

It has recently been found that peanut oil can be dissolved in an organic solvent or mixture of solvents, chilled, and the undesirable portion removed by filtering. Taking only an hour and a quarter to "winterize," a yield of 80% of oil that does not become cloudy can be secured for use in mayonnaise, salad dressings and at the table. Through use of this same process, a modified oil has been developed that is reported superior to olive oil as a textile lubricant.

Control of the moisture content of peanuts and peanut products has been found to be of paramount importance in increasing the length of time they can be kept fresh. Rooms in which peanuts are stored should have a relative humidity of about 60%. Study has also shown that the moisture content of pea-



BY THE PECK—Peanut picker in operation on a farm. The vines and nuts go into the back of the picker with the shelled nuts pouring out the side into a tub. Hay is baled for livestock feed.

nuts should be kept about 1.5% for roasted peanuts, slightly higher for hard peanut candies, and around 5% for cured nuts.

Approximately 90% of America's peanut oil production goes into edible products, vegetable shortening and oleomargarine accounting for most of it. Non-food uses include the manufacture of soap, shaving cream, cosmetics and pharmaceutical preparations. Highly refined oil has been found to be a good carrier for important drugs such as penicillin and adrenalin. Other possibilities include the use of peanut oil in oil sprays and insecticide emulsions.

Peanut hulls, now burned as fuel at the processing plants, may some day be the source of wood alcohol. Grape and wood sugars contained in the hulls can be fermented by a novel process worked out at the Northern Regional Research Laboratory to produce alcohol and other organic liquids for use as motor fuel.

Peanut Is a Legume

Because of its peculiar growth, peanuts are usually sown and harvested by hand. Instead of being a nut, the peanut is really a legume like a pea or bean. Its fruit or pod, however, matures beneath

the surface of the soil.

The small yellow flowers are borne at the joints where the leaves are attached to the stems. As soon as pollination takes place, the flowers fade, the stem bends down, and the "peg" elongates and goes into the soil where the pod develops. Hence peanuts must be grown on soil with a loose surface.

Peanuts are usually planted in rows two or three feet apart, the individual plants being set at four-inch intervals to keep them from spreading too much and producing many poorly filled pods. After digging, the peanuts are stacked around poles for curing. They usually remain on the curing stacks three to six weeks before the nuts are picked from the vines. Better methods of harvesting are being studied and a planter of new design was tested this spring.

About 750 pounds of peanuts are harvested per acre as an average for the United States. In Virginia and North Carolina, 1200 pounds per acre are produced, while in Texas and Oklahoma only about 450 pounds are obtained from each acre. This difference is partly due to the fact that peanuts are usually harvested mechanically in the Southwest; in Virginia and the Carolinas it is done by hand.

Peanuts are one of the leading crops in many of the Southern states. Twice as many are grown in Georgia as in the other peanut-producing states. When hay, which is sold like alfalfa, is included, the total farm value of peanuts last year was around \$285,000,000. The lower grades of peanuts are crushed for oil, the top grades are kept for use in candy, salted peanuts and peanut butter.

Peanuts are harvested early in August in South Texas; they can be left on the ground until November or December in North Carolina and Oklahoma. Around 1,500,000 tons of peanuts are expected to be harvested this year.

Rotating Crops

Raising peanuts soon exhausts the soil, so this crop is usually grown on the same plot only every third year or so. Investigations conducted at the Alabama Polytechnic Institute show that blue lupine is an excellent legume to use as a winter cover crop to restore the soil.

A top-notch soil builder is believed to consist of the following three-year rotation—one-third of the area planted in peanuts which are harvested. The barren peanut fields are protected during the winter by lupine with its rapid growth. The second year corn is grown. The third

year peanuts are produced, but instead of being harvested, hogs are turned in to fatten on the crop. The next year the soil is again ready to produce a bumper peanut crop.

Peanuts are exceptional among southern farm crops in that every part of the plant and all by-products resulting from the factory processing through which peanuts pass can be utilized in feeding stock. Peanut hay and light or inferior pods can be fed to the hogs on the farm. Meal from which the oil has been squeezed, red skins and "hearts," the embryo of the plant, all can be used to fatten hogs.

The hulls, besides being fed to stock, are utilized in insulation, paper board,

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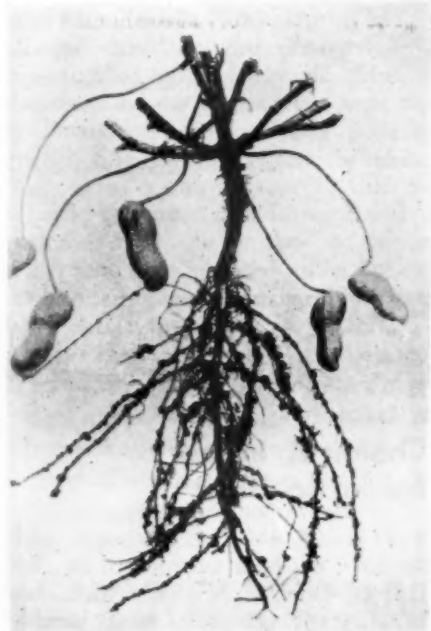
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LEGUMES—Peanuts are not nuts at all. The stems or "pegs" on which the flowers appear elongate above ground, bend down and bore into the earth, and the pods develop underground. Photo by Bureau of Plant Industry, Soils, and Agricultural Engineering, U.S.D.A.

Do You Know?

The cost of a *medical education* ranges from \$8,000 to \$12,000.

Malaria is a disease of the mosquito; man is an intermediate host.

Water-resistant *matches*, developed for soldiers, are now available for civilians; they will light after hours of soaking.

The *fungus* responsible for white pine blister rust cannot spread the infection from pine to pine, but lives one stage of its life on currant or gooseberry plants.

"Quick" *oatmeal* has a nutritional advantage over the old fashioned kind, it is claimed, since the content of vitamin B₁ or thiamin, decreases after the first 30 minutes of cooking.

A *shipping canal* to by-pass the Suez is said to be under consideration in London; it would be located in southern Palestine, connecting the Mediterranean near Gaza with a northern arm of the Red Sea close by Aqaba.

The strain of *mold* now used for most of the nation's penicillin production can be traced back to a mold on a Peoria, Ill., cantaloupe; with the help of X-rays or ultraviolet rays the yield of penicillin has been doubled.

YOUR HAIR AND ITS CARE

By O. L. Levin, M. D. and H. T. Behrman, M. D.

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If you want healthy hair, lovely hair, then you need the expert advice in this book.

Two medical specialists have here pooled their knowledge to give you in plain language the up-to-date scientific facts now available about hair. They tell you what to do to save and beautify your hair, stimulate healthier hair growth, and deal with many problems, common and uncommon, as:

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Medical science is better equipped than ever before to prevent hair trouble; or, if it already exists, to deal effectively with it.

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plastic filler and explosives. Cork substitute containing ground peanut hulls will probably be produced commercially soon. Plastic molding powders may also be made from the hulls.

The edible portion of the peanut contains major proportions of three primary dietary necessities: protein, carbohydrates and fat. Because of its relatively low moisture content and high percentage of fat, it is one of the most concentrated of foods. One gram supplies 5.8

calories, as compared with 2.3 for beefsteak, 3.6 for whole wheat, 2.6 for white bread and 4 for pure cane sugar. In addition, it contains significant amounts of vitamins and minerals.

India ranks first in world production of peanuts, Africa second, China third and the United States fourth. Whereas the others use the peanut only as oil seed or to feed livestock, the United States alone has built up an edible food industry based on peanuts.

Science News Letter, August 10, 1946

GENERAL SCIENCE

Smithsonian Century Old

See Front Cover

► THE SMITHSONIAN Institution, America's most venerable research organization, is having a birthday—a very important birthday. It is exactly a century old today.

As part of the celebration, a special postage stamp has been engraved, the first sheet of which was delivered to the Institution's Secretary, Alexander Wetmore, by Postmaster-General Robert T. Hannegan at a special ceremony in the auditorium of the National Museum. The stamp, which is of three-cent denomination, shows the many-turreted old building on the Mall in Washington, D. C., that houses the executive offices of the Institution and part of its exhibits. A view of the building as it appears on the new stamp is shown on the front cover of this SCIENCE NEWS LETTER.

The Smithsonian Institution, which owes its origin to a bequest made by an Englishman, James Smithson, who never saw America, has charge over the U. S. National Museum, the National Zoological Park, the National Herbarium, the National Gallery of Art, the Freer Gallery of Art, the National Collection of Fine Arts, the Bureau of American Ethnology and the Astrophysical Observatory. Closely associated with the government and administering certain government-supported agencies, the Institution is itself not government-controlled.

Collections in its various museums are in themselves a record of the Institution's long service to America's cultural, scientific and technical development. Here are housed the original models of Morse's telegraph, Whitney's cotton-gin, Howe's sewing-machine, Bell's telephone. Here is the flying-machine built by its secretary at the turn of the century, Dr. Sam-

uel P. Langley, with many another aircraft of later date. Here are some of the first steam locomotives to run on American rails.

Stowed in the great loft of the Smithsonian's administration building are scores of thousands of botanical specimens, many of them recording the travels of hardy souls who "saw the West first." On the other side of the Mall, in the National Museum of Natural History, are the massive skeletons of dinosaurs dug out of the rocks in the same West, decades later.

The natural history of the human races who originally peopled North America is richly illustrated in the collections in the same museum, in tens of thousands of skulls and hundreds of thousands of primitive weapons, tools and pottery vessels.

It is impossible to name any phase of science or culture on which scholarly work has not been done by present and past Smithsonian staff members. And the Institution's second century is now just opening.

Science News Letter, August 10, 1946

CHEMISTRY

Chemical Industry Medal to Dow

► THE CHEMICAL Industry medal for 1946 has been awarded to Dr. Willard H. Dow, of Midland, Mich., head of chemical companies that bear his name. He pioneered in production of bromine, magnesium, and other products from sea water, and during the war made styrene for synthetic rubber.

Science News Letter, August 10, 1946

The average *person* of 70 has slept enough throughout his life to total 20 years.



No matter what fuel the plant itself uses, gasoline helps take workers to and from their jobs, bring in raw materials and deliver finished products to the nation's markets.

Industry runs on gasoline

IT WOULD be impossible to draw a complete picture of modern industry without including cars, trucks, buses and other types of gasoline-powered equipment. Gasoline transportation is so much a part of the American industrial scene that *everyone* benefits each time its cost is reduced.

During the past twenty years such reductions have been many. By improving their refining processes and using antiknock fluid made by Ethyl, oil refiners have been able to produce gasolines of increasingly higher quality. And each improvement in gasoline has in turn made possible the development of more powerful, more efficient engines to provide better transportation at lower cost.

Because better fuels and better engines depend so much upon each other, Ethyl's research and service

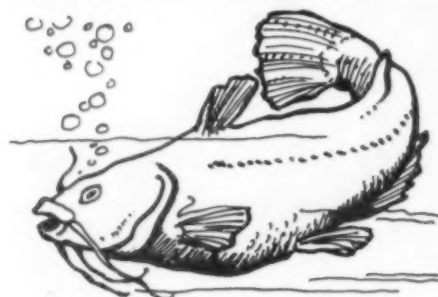
organizations have always worked closely both with refiners who use our product and with engine builders who are eager to get the most out of every improvement in gasoline quality. Ethyl Corporation, Chrysler Building, New York 17, N. Y.

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Awaiting Accolade

► **CATFISH!** The word is usually spoken scornfully, as of an inferior creature, little better than the worm he gulps for bait.

Admittedly, things are against the catfish socially. He hasn't much for looks, or grace, or agility, or fighting spirit, like the patrician trout, the lordly bass, even the robber-baron pike. He is content to



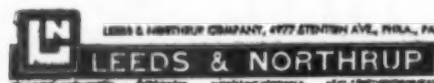
Photo Courtesy Rohm & Haas Co., Phila.

MICROMAX PLOTS CURVES FOR BUSY CHEMIST

Busy with a dozen details of his work with Plexiglas, this chemist is relieved of at least one duty—plotting temperatures of the reaction taking place in the metal cylinder at his left.

After putting the thermocouple in place, he merely runs their leadwires to the Micromax Recorder, and automatically secures temperature curves which are as satisfactory as those he could prepare himself by going through the manual routine of measuring couple emfs.

For Micromax details, see Catalog N-33A, sent on request.



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dwelling in the muddy slums of the aquatic world, snouting in the bottom slime for food and willing to eat almost anything. Only the carp will consent to live in worse quarters than a catfish will put up with. He is the pig among fishes.

That porcine metaphor, however, contains the catfish's vindication as well as his condemnation. For the pig, too, is unbeautiful, delights in mud, gobbles garbage, yet becomes most excellent eating when properly dressed and cooked. And just as the pig achieves a degree of splendor in the big wild boar, there is a catfish that comes very near to nobility—the big channel cat of the larger Midwestern rivers.

In that part of the country, at least, people have learned to appreciate the catfish that comes very near to nobility a really properly fried catfish can taste mighty good. They have made a virtue of necessity, for their rivers yield no trout, and you may have to drive for scores of miles to find even fair bass or pickerel fishing.

Similarly in the South, the catfish becomes a tasty dish in the hands of a cook, especially a Negro cook, who really knows his subject. Negroes, with their combination of poverty and frequent talents for cooking, have made some notable contributions to American cuisine out of once-plebeian, now-patrician meats—shad, for example, and terrapin. Catfish Africaine may yet appear as a featured item on the menus of our best restaurants.

Science News Letter, August 10, 1946

GEOLOGY

Engineers Study Arctic Building Problems

► **PERMAFROST**, the permanently frozen ground of the polar regions that covers one-fifth of the earth's land surface, is hazardous territory for building structures, reports of American and Russian research in the Arctic reveal.

U. S. Army engineers constructing northern wartime bases discovered that swelling, subsidence, landslides and icing were among the dangers of building on a frozen surface, while Russian engineers have been studying the problem in Siberia for 20 years.

By changing the ground temperature and mechanical conditions of the earth, buildings on permafrost can bring about their own doom by causing ground thaws or sinking, the reports indicate.

In Siberia, studies of permafrost have

shown that the frozen layer may be only a few feet deep or can in some cases extend several hundred yards down into the earth. In the southern Arctic, the permafrost layer is sometimes buried beneath a thin surface that thaws and freezes with the seasons.

Permafrost is nothing new, much of its present area having been frozen since the Ice Age.

Science News Letter, August 10, 1946

PHYSICS

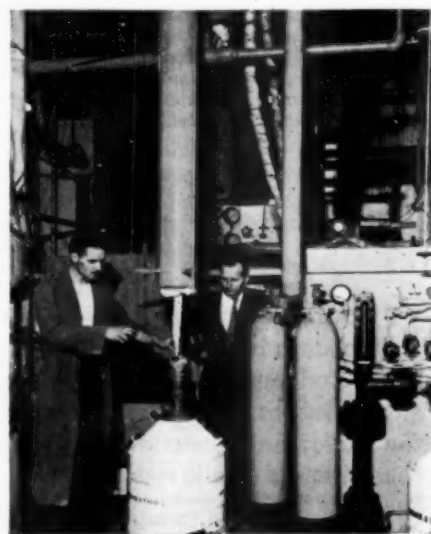
Near-Zero Cold Goal Of Ohio State Apparatus

► A **TEMPERATURE** of within one-thousandth of a degree of the unattainable absolute zero of cold will shortly be achieved in the low temperature laboratory of the Ohio State University that was built secretly during the war.

The magnetic cooling cycle to be used is available in only two other cryogenic laboratories in the United States.

Superconductivity of metals at very low temperatures is also on the research program announced by Prof. Herrick L. Johnston, director, who revealed that the low temperature apparatus, rushed into operation in 1942, did work on the atomic bomb project.

Science News Letter, August 10, 1946



LIQUID AIR—At Ohio State University's War Research Laboratory, a laboratory technician withdraws liquid air from the liquefying apparatus at a temperature of 308 Fahrenheit degrees below zero. Extremely low temperatures played an important part in the University's atomic research for the Manhattan Project.

• Books of the Week •

THE ALKALINE-EARTH AND HEAVY-METAL SOAPS—Stanley B. Elliott—*Reinhold*, 342 p., tables and illus., \$7.50. A book to acquaint research chemists and technologists with the manufacture, properties, and typical applications of the alkaline-earth and heavy-metal soaps.

THE AMERICAN HOSPITAL—E. H. L. Corwin—*Commonwealth Fund*, 226 p., tables, \$1.50. A factual analysis of existing hospital conditions in the light of significant evolutionary trends.

THE CHILD FROM FIVE TO TEN—Arnold Gesell, M. D., and Frances L. Ilg, M. D.—*Harper*, 475 p., \$4. A year by year series of psychological portraits with concrete guidance suggestions, covering the following areas of the child's life: motor characteristics, personal hygiene, emotional expression, fear and dreams, self and sex, interpersonal relations, play, school life, ethical sense, and philosophic outlook.

ENVIRONMENTAL WARMTH AND ITS MEASUREMENT: A Book of Reference Prepared for the Royal Naval Personnel Research Committee of the Medical Research Council—T. Bedford—*British Information Services*, 40 p., tables and illus., paper, 25 cents. A study of air temperature, humidity, etc., with special reference to conditions on board ship. (Also **CHARTS FOR THE CALCULATION OF ENVIRONMENTAL WARMTH**, 45 cents.)

KNOTS AND ROPE: Phototold in 195 Pictures—Fremont Davis and Marjorie Van de Water—*Infantry Journal Press*, 86 p., illus., \$2. Visual instruction, with some lines of text, showing how the rope is useful as a tool and how the most complex knots, hitches, and splices can be easily tied and used.

LEAD REPLACEMENTS IN DINNERWARE GLAZES—H. J. Orlowski and John Marquis—*Ohio State Univ. Experiment Station*, 58 p., tables, paper, 50 cents. A study of the leadless glazes. Ohio State Univ. Studies, Engineering Series, Vol. XV, No. 2.

LET'S COOK: A Manual for 4-H Club Members—*Cornell Univ.*, 64 p., illus., paper, 5 cents, Cornell 4-H Club Bull. 73.

LIPPINCOTT'S QUICK REFERENCE BOOK FOR MEDICINE AND SURGERY: A Clinical, Diagnostic, and Therapeutic Digest of General Medicine, Surgery and the Specialties, Compiled Systematically from Modern Literature—George E. Rehberger, M. D.—*Lippincott*, 1461 p., tables and illus., \$15.00, 13th ed.

THE MAGNETRON AS A GENERATOR OF CENTIMETER WAVES: J. B. Fisk, H. D. Hagstrom, and P. L. Hartman—*American Telephone and Telegraph Co.*, 348 p., tables and illus., paper, \$1. The Bell System Technical Journal, Vol. XXV, No. 2.

MIRACLES FROM MICROBES: The Road to Streptomycin—Samuel Epstein and Beryl Williams—*Rutgers Univ. Press*, 155 p., \$2. A non-technical, full story of antibiotics, the great new highway to human health which science is creating.

PHYSICAL LAND CONDITIONS IN ANDERSON COUNTY, SOUTH CAROLINA—*Government Printing Office*, 46 p., tables and illus., paper, 20 cents. The results of a field survey by E. A. Burgess and party; land-capability tables and recommendations by technicians of the Soil Conservation Service cooperating with the Upper Savannah Soil Conservation District. Physical Land Survey No. 38.

OUR WORLD AND SCIENCE—Samuel R. Powers, Elsie F. Neuner, Herbert B. Bruner, and John H. Bradley—*Ginn*, 684 p., illus., \$2.20, new ed. A textbook in natural science for boys and girls in the early high-school years.

PROCEEDINGS OF THE SOCIETY FOR EXPERIMENTAL STRESS ANALYSIS: Vol. III, No. 2—C. Lipson and W. M. Murray, ed.—*Addison-Wesley*, 166 p., diagrs. and illus., \$5.

SEX PROBLEMS OF THE RETURNED VETERAN—Howard Kitching, M. D.—*Emerson*, 124 p. \$1.50. Information for the

returned veteran and his wife, to help them rebuild their marriage successfully after the emotional upheaval resulting from separation due to war.

TREE-RING HYDROLOGY OF THE COLORADO RIVER BASIN—Edmund Schulman—*Univ. of Arizona*, 51 p., tables and illus., paper, 60 cents. Laboratory of Tree-Ring Research, Bull. No. 2.

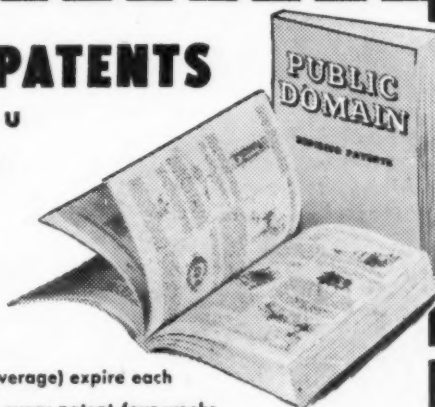
WATCH YOUR STEP: Avoid Farm Accidents—*Government Printing Office*, 32 p., illus., paper, 10 cents. A booklet designed to give the farmer an understanding of the problem of accidents on the farm, and to suggest specific measures for its solution. U. S. Department of Agriculture, Misc. Publ. No. 608.

The first bicycle was invented 100 years ago by a village blacksmith of Keir, Scotland; the inventor, Kirkpatrick MacMillan, rode the iron-rimmed wheels 70 miles from Keir to Glasgow.

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Science News Letter, August 10, 1946

❁ SCISSORS on wheels can be accurately guided over the cloth by tailors and dressmakers. The primary blade of the shears is straight along its lower edge, and in the same horizontal plane with the lower portion of the roller or wheel, mounted on the handle.

Science News Letter, August 10, 1946

❁ HOME CANNING aid flashes red signal to warn canner of unsafe vacuum sealing. User sets dial for any of the nationally known makes of lids, presses tester down on lid. If jar is safely sealed, the green side rises; if not, the red stays up.

Science News Letter, August 10, 1946

❁ IN-CAR speakers for drive-in theaters are weatherproofed for permanent location on parking ramps and can be used with car windows closed in cold weather. A short circuit affects no more than the two speakers connected to one terminal box.

Science News Letter, August 10, 1946

❁ VERSATILE cabinet is topped by three tray-type shelves supported by



swing-lock uprights. The cabinet can be swung into a flat-top serving table, a three-tiered magazine table, or used as a sick-room cabinet.

Science News Letter, August 10, 1946

❁ ELECTRIC EYE helps keep auto plant air free from carbon monoxide. It releases a magnetic valve operating a pneumatic cylinder which opens up an air scoop, sucking the poisonous fumes from the tail pipe of each car being tested on the assembly line.

Science News Letter, August 10, 1946

❁ COLLAPSIBLE wading pool, of heavy duck fabric colored red outside and green inside, is coated with a synthetic rubber used on portable tanks for storing water in Pacific combat areas. The sun-proof, rot-proof pool is 68 inches in diameter and 16 inches high; it takes only a few minutes to assemble and fill.

Science News Letter, August 10, 1946

❁ COMBINED package and serving dish for individual portions of dry cereal is intended for discard after use. The saucer-like cover that sets downward into the container, leaves space for addition of milk and fruit when removed.

Science News Letter, August 10, 1946

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Question Box

AERONAUTICS

How are airplane windshields kept clear and free from ice and fog? p. 89.

ATOMIC ENERGY

What phase of warfare governed the early research for atomic bombs? p. 84.

CHEMURGY

Is the peanut really a nut? p. 91.

What are some of the many uses of peanuts? p. 90.

FOOD TECHNOLOGY

What causes milk to have a tallowy flavor? p. 88.

GARDENING

How are tools built so that the blind may use them for gardening? p. 86.

Where published sources are used they are cited.

GENERAL SCIENCE

How old is the Smithsonian Institution? p. 92.

GEOLOGY

What are the problems of builders in the Arctic regions? p. 94.

ICHTHYOLOGY

Is the catfish good for food? p. 94.

MEDICINE

What protective measures are advocated to keep down the spread of polio? p. 87.

PHYSICS

What radioactive isotope has been shipped from Oak Ridge for research uses? p. 83.

August 6 is the first anniversary of what atomic bombing? p. 85.

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